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MRT news

newsletter of the MRT project

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ICON IN THE HEART OF THE CITY

THE Bukit Bintang MRT Station is poised to be one of the busiest stations of the MRT Sungai Buloh-Kajang Line as it serves the heart of Kuala Lumpur's Golden Triangle. Read about how this station is being constructed on Page 3.

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from the desk of the CEO

DATO' SERI SHAHRIL MOKHTAR

KEEPING UP THE MOMENTUM

IT gives me great pleasure to pen my first message for MRT News, the MRT Project's newsletter, as Chief Executive Officer of Mass Rapid Transit Corporation Sdn Bhd (MRT Corp).

I am extremely honoured that the Government has given me the opportunity to helm the company that is developing the country's largest infrastructure project.

The pressure on me is great because the Project is constantly under the spotlight. Of course, in a way, I should be grateful for this because I believe this interest is partly due to the good progress we are achieving.

As at 31 March 2015, construction of the MRT Sungai Buloh-Kajang Line was at 62%. For the individual components, the elevated section was at 52.8% while the underground section was at 76.5%.

Within the first few months of me taking up this position, I have had the opportunity to very quickly see the progress achieved with my very own eyes.

In early February, I went to Cochrane Station and I am pleased to share that the structure of this four-storey underground station is virtually completed. The next step will be for the electrical and mechanical equipment to be fitted in.

I also walked the tunnel between Cochrane Station and Tun Razak Exchange Station. This stretch of tunnels was the first in the Project to be completed. The tunnels are now ready to be fitted with tracks and other infrastructure.

Our elevated section is also doing very well and I am very happy to see that the roof of the Taman Midah Station is already being constructed. As for the elevated guideway, many of our Work Package Contractors are already completing their sections and handing these stretches over to our Track Works Contractor to start track-laying work.

Now would be a good point for me to recognize the effort which my predecessor Datuk Wira Azhar Abdul Hamid has put into this Project, resulting in it being at this healthy position. My immediate focus will be to ensure that the

momentum attained under him is maintained as we move into the second half of the construction of the MRT Sungai Buloh-Kajang Line.

What is in store this year for the Project is extremely exciting. We will see our civil structures – guideways, tunnels and stations – completed and System Works move into full gear.

One of the System Works Package is the supply of our trains. Two complete sets of trains have been sent to the Sungai Buloh Depot for testing. Another seven trains are at various stages of completion as they undergo assembly in the Rasa Train Assembly Plant.

Other System Works items are in progress, such as track works, power supply, signalling and train control.

The next big thing on the horizon is the Klang Valley MRT Project's second line, the MRT Sungai Buloh-Serdang-Putrajaya Line (SSP Line).

All parties involved in rolling out the SSP Line are working hard to prepare for the Public Display of the line which is expected to take place in the second quarter of this year.

Once the Public Display is over, the alignment of the SSP Line can be finalised after incorporating changes arising from public feedback. After that, construction can begin.

With two lines under construction, it will be an extremely busy time for everyone in MRT Corp. However, I am sure with the dedication which my senior management team and staff had already shown for the first MRT line, I am confident we will be able to sail through comfortably this extremely challenging but exciting time together as a team.

Thank You.

Shahril



DID YOU KNOW THAT ...

IN the late 19th and early 20th century, the Klang Valley had a substantial rail network and trains ran to towns like Ampang, Batang Berjuntai, Batu Arang, Bukit Badung, Jeram, Kuala Selangor, Kundang and Pudu. Originally built to serve tin and coal mines, these lines were removed when the mines closed. Today, LRT and MRT lines are being built at some sections of these lines. As a result, Ampang and Pudu are once again served by trains.



BUILDING AN UNDERGROUND STATION BENEATH BUSY BUKIT BINTANG

By Nik Haizan Nik Zambri

THE Bukit Bintang MRT Station is one of the more challenging stations of the MRT Sungai Buloh-Kajang Line to build. In Part One here, we explain how the construction of the station was carried out. Part Two in the next edition of MRT News will unveil some of the non-construction challenges the Project faced.

BUILDING a railway through a well-developed and matured city is a great challenge.

Even by going underground, fitting in structures like underground stations and tunnels is difficult because of space constraints and the busy environment.

Construction work at such locations also face other challenges like dealing with huge amounts of underground utilities such as electric and communication cables, water and sewerage pipes.

The MRT Sungai Buloh-Kajang Line's Bukit Bintang MRT Station is being built under such circumstances, making it one of the most challenging stations to construct.

Located in the heart of Kuala Lumpur's most densely built up and busy area, the construction of this station beneath Jalan Bukit Bintang in front of BB Plaza required considerable innovation in terms of design and construction method.

One of the main considerations when choosing the construction method was the need to ensure that Jalan Bukit Bintang and the other main roads in the area remained opened throughout the period of construction.

"This requirement of course was quite a challenge considering that the station had to be built underneath Jalan Bukit Bintang," said Mass Rapid Transit Corporation Sdn Bhd (MRT Corp), Senior Project Manager, Underground Stations, Mr Danny Lim.

Lim, a returning Malaysian engineer who has had vast experience in underground railway construction in Singapore, oversees the construction of the Bukit Bintang MRT Station as well as three other underground stations of the MRT Sungai Buloh-Kajang Line.

ROOF BUILT IN TWO STAGES

The method chosen for the construction of the Bukit Bintang MRT Station required the station roof to be built in two stages.

Before construction could begin, the space in front of BB Plaza and the Yayasan Selangor Building had

to be cleared for the temporary diversion of Jalan Bukit Bintang. This required the relocation of a number of kiosks and other structures. This took place in the second quarter of 2012.

Once Jalan Bukit Bintang was diverted and utilities relocated from the original road alignment, diaphragm walls (extremely strong retaining walls which keep the station box in shape) along the perimeter of the one half of the station were constructed. After that, the digging began.

"We excavated till the level for the station roof to be built and started to construct the first half of the station roof slab," Lim said.

Once this half of the roof slab was constructed, the top was backfilled till ground level. Jalan Bukit Bintang was reinstated above the roof, allowing the road to revert to its original alignment. This took place in January 2014.

With Jalan Bukit Bintang returning to its original alignment, the area directly in front of BB Plaza, which had served as the road diversion, was quickly transformed into the worksite for the next phase.

Under Phase Two, the diaphragm walls for the remaining half of the station were constructed, and when that was completed, excavation of the rest of the station box could proceed.

"After the diaphragm walls, we constructed the second half of the station roof. This roof was 'stitched' to the first half of the roof which had been built earlier, thus forming the entire roof of the station," Lim explained.

The roof slab had openings where excavators and other machinery "entered" to excavate the earth beneath to create the station, floor by floor downwards. These openings were also where excavated material was removed.

"This method of construction is called the 'top-down' method. We build the roof first, then excavate beneath the roof to build the next floor down, construct the slab for that floor, then excavate beneath that floor to build the next floor down, until we reach the lowest level where we build the base slab," Lim said.



NARROW SITE • Aerial view of the station site.



TOP-DOWN • The top-down method of construction sees excavation of the station box after the roof slab is constructed.

This method allowed parts of the surface area of the worksite site – in this case, the original alignment of Jalan Bukit Bintang - to "return to normal" as quickly as possible.

Furthermore, when the floors are built as excavation progresses downwards, they act to hold the station box structure in shape. As a result, this method of construction is also good for excavation in densely built-up areas because it causes less impact on adjacent existing buildings.



LOWER PLATFORM • Artist impression of the Lower Platform for trains headed to Sungai Buloh.



PLATFORM LEVEL • View of the Upper Platform Level where passengers will board trains headed towards Kajang.

DYNAMIC

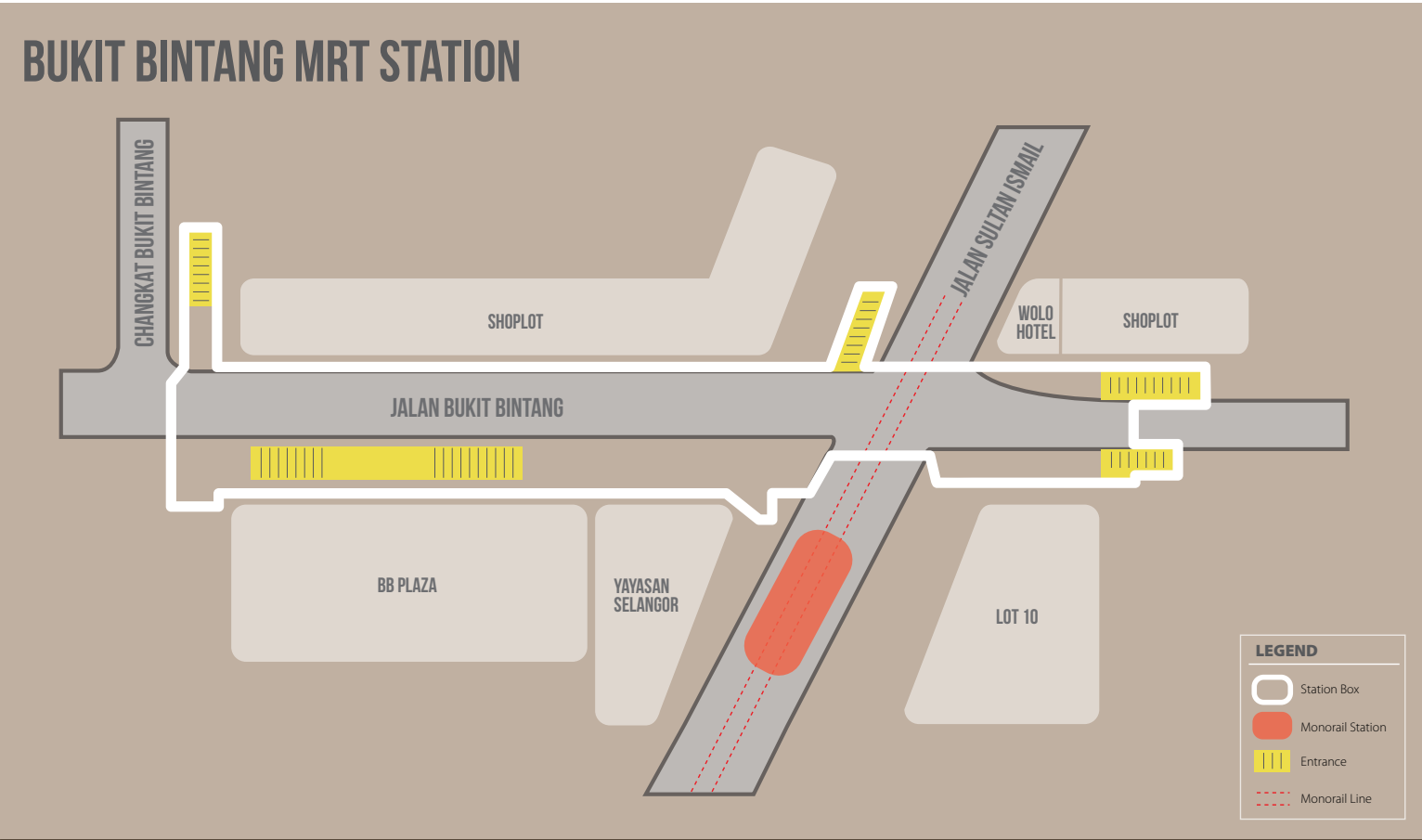
Located in the heart of Kuala Lumpur's premier district, it was also important for the station's interior to reflect the vibrancy of the area it serves.

"The place is fast-paced and this goes with the theme that we have chosen for the station, which is 'Dynamic'. This is translated with prominent geometry designs in different shades of red that represents momentum," explained Lim.

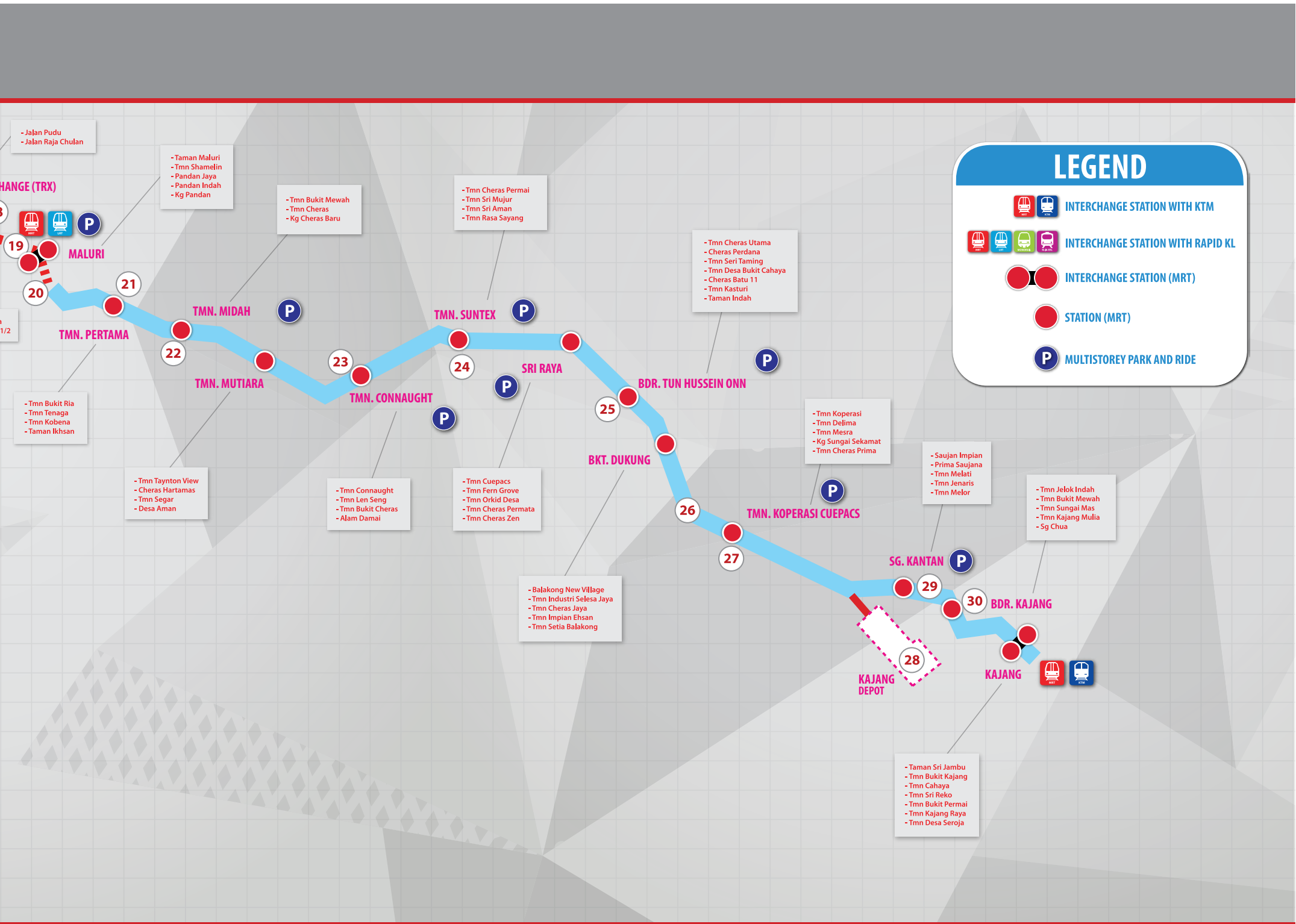
He added that coloured glass and metal cladding would be used for the entrance structure to evoke a vibrant, energetic and cutting edge quality. Furthermore, glass panels at the five entrances of the station would let soft natural light directly into the station.

"We hope that with the effort the Project has put in, commuters will get a pleasant experience when they use the station.

"I am absolutely certain that this station will become a major landmark in Kuala Lumpur's Golden Triangle," he said.







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COMPLETED

The MRT guideway near the Kiara Muslim Cemetery.



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COMING UP

View of the Philo Damansara MRT Station being constructed.



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TAKING SHAPE

Evening aerial view of the construction work at Pusat Bandar Damansara MRT Station.



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COMPLICATED

Daytime aerial view of the construction work at Semantan MRT Station.



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INTERFACE

Bored piling works being carried out at the interface between Package V4 and the Semantan Portal.



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STACKED TUNNELS

View of the Inai Lower Shaft with the north-bound tunnel at the bottom and south-bound tunnel above.



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FULL SWING

View of the south end of the Tun Razak Exchange station box with the construction of the Upper Platform Level (back) and the Lower Plant Room Level (foreground).



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ACCESS

Staircase inside the Cochrane MRT Station leading from the Upper Plant Room Level (top) to the Concourse Level (bottom). Between the two floors is the Lower Plant Room Level.



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NARROW SITE

View of the area for Adits (Entrances) B and C of the Maluri MRT Station where the station outer wall and columns are being constructed.



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SOUTHERN END

Aerial view of the Maluri Portal which is the southern end of the MRT Sungai Buloh-Kajang Line underground alignment.



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ALMOST COMPLETED

View of the special span over the Cheras-Kajang Highway being constructed.



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COMING UP

The Taman Koperasi Cuepacs Station under construction.



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VAST SITE

Aerial view of the Kajang Depot site.



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PUSHING AHEAD

Aerial view of the Sungai Kantan MRT Station being constructed.



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EVENING VIEW

The Bandar Kajang MRT Station which is located beside the Kajang Stadium in evening light.

NEW MRT CORP CEO MEETS HIS STAFF

By Nik Haizan Nik Zambri



CASUAL • Dato' Sri Shahril Mokhtar addressing MRT Corp staff during the town hall session.



BREAKING THE ICE • Dato' Sri Shahril Mokhtar introducing himself to every single staff member just before starting the town hall session.



LEADERS • The MRT Corp senior management team with the new CEO.

MASS Rapid Transit Corporation Sdn Bhd Chief Executive Officer, Dato' Sri Shahril Mokhtar took the opportunity to meet his new staff during the year's first *teh tarik* session which was held on 6 January 2015, his second day in the company.

During the session, Shahril explained to the staff his vision for the company. He expressed his wish for everyone to remain focused on ensuring the delivery of the MRT Project on time and within the target cost but without compromising on quality and safety.

"I congratulate everyone here for the MRT Project's good progress," he said, adding that he was very happy that the Project was on schedule for Phase 1 Operations (between Sungai Buloh and Semantan Stations) by 31 December 2016, and for Phase 2 Operations (rest of the line) by 31 July 2017.

"My main focus will certainly be to ensure the momentum that has brought about good progress for the MRT Sungai Buloh-Kajang is maintained," he said. Besides *teh tarik* sessions, which are town-hall sessions attended by every staff in the company, Shahril said he would like to introduce informal meeting sessions with small groups of staff over breakfast.

"I had introduced these *nasi lemak* breakfast sessions with staff in my previous organisation and I find them extremely good in allowing me to get to know my staff better," he said.

Shahril, who was Group Managing Director of Syarikat Prasarana Malaysia Berhad before his present post, also explained that he had been involved in the MRT Project since Prasarana was previously the owner of the project.

His involvement with the MRT Project however, continued as he was a member of the MRT Corp's Board of Directors.

In Prasarana, Shahril oversaw the restructuring of that company, which is the country's largest public transport company.

Prior to Prasarana, Shahril was the Chief Operating Officer at Suruhanjaya Pengangkutan Awam Darat (SPAD), and General Manager of Corporate Planning in RapidKL before that.

When he was in RapidKL, he was seconded as an Advisor to the Economic Planning Unit in the Prime Minister's Department where he was involved in drafting the Suruhanjaya Pengangkutan Awam Darat Act 2010 and the Land Public Transport Act 2010.

He was also involved in the laboratory for urban public transport improvement which was held as part of the Government Transformation Programme.

Shahril took over the position from Datuk Wira Azhar Abdul Hamid who resigned in December 2014.

OWNERS AWED BY UNDERGROUND WORKS

By Wallace Soh Chun Hwei

A visit to the MRT Sungai Buloh-Kajang Line's Merdeka Station was organised for several owners of Jalan Sultan properties on 28 January 2015 to give them the opportunity to see first-hand the construction of the MRT underground station and tunnel.

The visitors arrived at the Merdeka Station site at 10:30am and were welcomed by the personnel from Mass Rapid Transit Corporation Sdn Bhd (MRT Corp) and MMC-Gamuda KVMRT (T) Sdn Bhd, the Underground Works Contractor for the MRT Sungai Buloh-Kajang Line.

They were given the latest construction progress updates by Encik Yusni Shahadan, MMC Gamuda's Construction Manager for Merdeka Station.

Before going into the station box, a safety briefing was carried out and each visitor was provided with personal protective equipment, including a helmet, a safety vest and safety boots.

Accompanied by a team of engineers, site supervisors, safety officers and other personnel, the visitors, numbering around 10 people, entered and descended to the base level of the Merdeka Station box which was more than 30m from the surface.

At the base of the station, they saw the Pudu 1 Tunnel Boring Machine which had earlier broken into the station box.

They were also brought for a short walk into the completed tunnel for future south-bound trains.

Throughout the visit, the engineers were at hand to provide information and answer questions

from the visitors, who also took the opportunity to understand as much as possible about what they were seeing.

They also took photos to capture the exciting experience.

The visitors were among the owners of Jalan Sultan properties who had entered into agreements with MRT Corp.

These agreements enabled the tunnels of the MRT Sungai Buloh-Kajang Line to be constructed beneath their properties and for this reason, they were particularly interested to see how the MRT Project's underground works were being carried out.

MRT Corp's Director of Stakeholder Relations and Land Management Encik Haris Fadzilah Hassan said a visit to the MRT tunnel was always a good learning experience for everyone.

"By organising this, we have brought one-step further in our stakeholder engagement efforts with the Jalan Sultan property owners," he said.

The final stretch of tunnelling for the MRT Sungai Buloh-Kajang Line will involve the construction of twin MRT tunnels beneath several properties at Jalan Sultan.

Excavation of the tunnel for south-bound trains had been completed by early January while excavation for the tunnel for north-bound trains was on-going during press time and expected to be completed in April 2015.



INTO THE TUNNEL • Visitors walking down into the shaft.



FOR POSTERITY • The visitors posing for a group photo in front of the Pudu 1 Tunnel Boring Machine.



FULL ATTENTION • Personnel from MMC-Gamuda Sdn Bhd explaining to the visitors on how the TBM works.

HAPPENINGS



TUNNEL CHECK • The National Audit Department, led by the Auditor-General Tan Sri Ambrin Buang, visited several MRT Project sites, including the tunnel between Cochrane and Tun Razak Exchange Stations, on 25 February 2015.



LEARNING EXPERIENCE • Students from the Management and Science University visited the MRT Project Information Centre at Damansara Utama on 22 December 2014.



ENGAGING THE PUBLIC • A community leader speaking during an engagement session with the residents of Kampung Bukit Dukung, Kajang, on the construction of the multi-storey park and ride facility at the Taman Koperasi Cuepacs Station on 22 January 2015.



THUMBS UP • Members of the DAP's Federal Territory Committee giving their support for the MRT Project during a visit to the Bukit Bintang MRT Station on 24 January 2015.

PRIME MINISTER VISITS TRX STATION

By Amalina Ghazali



■ **ENGINEERING FEAT** • Dato' Sri Najib Tun Razak at the tunnel for future Sungai Buloh-bound trains inside TRX Station.



■ **UPDATE** • Mr Marcus Karakashian briefing Dato' Sri Najib Tun Razak on the progress of the Project. Behind them is Dato' Sri Shahril Mokhtar.



■ **INFORMATION STOP** • Dato' Sri Najib Tun Razak having a closer look at a picture of the MRT trains during his tour of the station.

PRIME Minister Dato' Sri Najib Tun Razak visited the Tun Razak Exchange Station site of the MRT Sungai Buloh-Kajang Line on Tuesday, 3 March 2015.

His visit, the third to the MRT Project, showed his commitment towards ensuring that the Project was at the desired level of progress, enabling it to be fully operational by July 2017.

The Prime Minister arrived at the TRX Station site at 4.40pm and was greeted by Mass Rapid Transit Corporation Sdn Bhd (MRT Corp) Chairman Tan Sri Dr Ali Hamsa and Chief Executive Officer Dato' Sri Shahril Mokhtar.

He was led to the viewing deck where he got to see the overall construction of the station, the biggest and deepest of the MRT Sungai Buloh-Kajang Line's seven underground stations.

He then descended to the station's lower platform level where he saw the completed tunnel for future Sungai Buloh-bound trains.



■ **STATION TOUR** • Dato' Sri Najib Tun Razak with (from left) SPAD Chairman Tan Sri Dato' Sri Syed Hamid Albar, Dato' Sri Shahril Mokhtar and Datuk Ahmad Maslan, heading towards the viewing deck.

He was also shown the track bed and platform area which had been built in preparation for the future MRT Line 2.

Throughout the visit, he was briefed by MRT Corp Sungai Buloh-Kajang Line Project Director Mr. Marcus Karakashian.

Also present for the site visit were Deputy Finance Minister I Datuk Ahmad Maslan, Kuala Lumpur Mayor Datuk Seri Ahmad Phasal Talib, and Federal Territories Ministry Secretary-General Datuk Seri Adnan Md Ikhsan.

MMC Gamuda KVMRT (T) Sdn Bhd, the Project's Underground Works Contractor, was represented by Gamuda Berhad's Group Managing Director Dato' Lin Yun Ling, MMC Corporation Berhad's Chairman Tan Sri Dato' Wira Syed Abdul Jabbar Syed Hassan and MMC Corporation Berhad's Group Managing Director Dato' Sri Che Khalib Mohamad Noh.

The media was also present to cover the event.

Shahril said he considered the interest shown by the Prime Minister on the MRT project to be a great honour.

"This is a motivating factor for the various teams to pool their resources towards completing the line on time and within cost," he said.

The Prime Minister's first visit was a surprise visit to what was then the Cochrane Launch Shaft on 3 January 2013 while during his second visit on 30 May 2013, he officiated the start of tunnelling works for the MRT Sungai Buloh-Kajang Line at the same launch shaft.

MRT CORP WELCOMES THE DEPUTY FINANCE MINISTER TO TAMAN MIDAH STATION

By Amalina Ghazali

DEPUTY Finance Minister I Datuk Ahmad Maslan made a working visit to the Taman Midah MRT Station in Cheras on Friday, 13 February 2015.

He was greeted at the site by Mass Rapid Transit Corporation Sdn Bhd (MRT Corp) Chief Executive Officer Dato' Sri Shahril Mokhtar. With him was MMC Gamuda KVMRT (PDP) Sdn Bhd Acting Project Director Dato' Wong Wai Ching and IJM Corporation Bhd Deputy Chief Executive Officer and Deputy Managing Director Dato' Soam Heng Choon.

Ahmad's visit was in line with a Cabinet directive issued in 2009 for Deputy Ministers to visit at least one project every month.

During the visit which included the media, the Deputy Minister was first briefed on the construction progress of the Project and the Taman Midah MRT Station by MRT Sungai Buloh-Kajang Line Project Director Mr Marcus Karakashian.

Construction of this station by contractor IJM Construction Sdn Bhd, a subsidiary of IJM Corporation Bhd, was at an advanced stage and was the first elevated station to have its roof structure installed.

Ahmad was led to the elevated guideway where he witnessed the laying of tracks for the MRT Sungai Buloh-Kajang mainline.

Media photographers who accompanied the Deputy Minister took the opportunity to snap photos of the VIP and the station which has a very impressive view of the skyline of Kuala Lumpur.

Later at a media conference, Ahmad told the media that he was pleased with the progress achieved by the MRT Project.

"We thank MRT Corp's former Chief Executive Officer Datuk Wira Azhar Abdul Hamid for a job well done. Despite the incident in August 2014, he was committed to safety on sites. And I'm sure Dato' Sri Shahril Mokhtar, who took over, will augment that further," he said.

When asked by the media whether the MRT Project would be affected by the appreciation of the US Dollar, he stated that the infrastructure development project had high local content and would not be affected. Furthermore, contracts for the Project were denominated in ringgit and were thus not exposed to currency fluctuations.



■ **STATION VISIT** • Datuk Ahmad Maslan (centre) walking on the elevated guideway where he witnessed the laying of tracks for the MRT Sungai Buloh-Kajang mainline.



■ **FRIENDLY** • Deputy Finance Minister I Datuk Ahmad Maslan greeting the media.

CEO LEADS MEDIA TOUR OF MRT UNDERGROUND STATIONS AND TUNNEL

By Amalina Ghazali

MASS Rapid Transit Corporation Sdn Bhd (MRT Corp) Chief Executive Officer Dato' Sri Shahril Mokhtar led the media on a tour of the Cochrane and Tun Razak Exchange Stations as well as a walk-through of the tunnel between the two stations.

The tour, which was held on Tuesday, 11 February 2015, was his first engagement with the media since becoming MRT Corp CEO in January this year. It was also the first time that the media had been given the opportunity to walk a stretch of the MRT tunnel.

Around 40 members of the media joined the tour.

The journalists were first given a short briefing on the construction of the two stations at the Cochrane Station Upper Plant Room Level by MRT Sungai Buloh-Kajang Line Project Director Mr Marcus Karakashian. He also gave an insight on the progress of the underground tunnels.

Following the briefing, the journalists were taken for a 1km walk through the tunnel for future Sungai Buloh-bound trains, between Cochrane and TRX Stations.

During the walk, the journalists were shown interesting features such as the locations where the tunnel ran under the Ikano Development, SMART Water Tunnel and Road Tunnel, as well as the location of Escape Shaft 3.

A media conference was held at the TRX Station site, where Shahril and Karakashian were joined by MMC Gamuda KVMRT (T) Sdn Bhd Project Director Mr Satpal Bhogal.

"I am pleased with the progress achieved thus far. As we move our focus towards the Systems portion of construction, I will ensure that the good progress continues," he told the media.

Shahril also said he was confident that the targetted operation dates, namely 31 December 2016 for Phase One between Sungai Buloh and Semantan Stations, and 31 July 2017 for the rest of the line, will be achievable.



■ **MAIDEN TOUR** • Dato' Sri Shahril Mokhtar leading the media on a walk-through of the tunnel.



■ **BRIEFING** • Mr Marcus Karakashian briefing the media at the Station's Upper Plant Room level.



■ **MRT CORP TEAM** • Dato' Sri Shahril Mokhtar and the MRT Corp Senior Management Team inside the tunnel.

FIRST PACKAGE TO COMPLETE THE ELEVATED GUIDEWAY

By Nik Haizan Nik Zambri

IT was a double celebration for Gadang Engineering (M) Sdn Bhd as it became the first Viaduct Work Package Contractor to complete the construction of the elevated guideway for the MRT Sungai Buloh-Kajang Line.

The contractor completed the final span, between Piers PJ 18 and PJ 19, which is located along Persiaran Surian in Kota Damansara, on Chinese New Year Eve on 18 February 2015.

Gadang Engineering is the Work Package Contractor for Package V2 which involves the construction of the MRT elevated guideway from Kwasa Damansara Station to Surian Station, a distance of 5km.

With the final span completed, this stretch of the MRT elevated guideway will be handed over to Mitsubishi Heavy Industries Ltd for track laying works.

Package V2 includes three elevated MRT stations, namely Kwasa Sentral, Kota Damansara and Surian Stations. Construction of these stations are currently on-going and is being handled by nominated sub-contractor Naim Engineering Sdn Bhd.

Following Gadang Engineering's achievement, IJM Construction Sdn Bhd for Viaduct Package V5 and MTD Construction Sdn Bhd for Viaduct Package V7 are expected to complete their elevated guideways in April.

The overall completion of MRT elevated guideways stood at 82% as at the end of 31 March 2015.



COMING TOGETHER • A launch gantry lifting the last segmented box girders to complete the viaduct span.



CONTINUOUS STRETCH • View of the MRT viaduct.

THE FINAL STRETCH

By Leong Shen-li

IT was exactly 20 months to the date after the first tunnel boring machine (TBM) roared to life, that the same machine began excavating the final stretch of tunnel for the MRT Sungai Buloh-Kajang Line's underground alignment.

On 30 May 2013, Prime Minister Dato' Sri Mohd Najib Tun Abdul Razak had launched the Cochrane 1 TBM at the Cochrane Launch Shaft, excavating the north-bound tunnel towards Tun Razak Exchange.

After going through two name changes – it became Inai 1 and Pudu 1 as it excavated and constructed the tunnel past the Inai and Pudu Shafts in Kuala Lumpur's Golden Triangle – the TBM was relaunched on 30 January 2015 at the Merdeka Station box to excavate the final 700m stretch of tunnel to Pasar Seni MRT Station.

The final stretch of the MRT tunnel between Merdeka MRT Station and Pasar Seni MRT Station is significant as it runs under Jalan Hang Jebat and busy Jalan Sultan in the heart of Kuala Lumpur's Chinatown.

In fact, the tunnel will be excavated and constructed beneath several shophouses and the porch of a church while they continue to be occupied and used.

A lot had been reported by the media about the MRT tunnel being constructed beneath Jalan Sultan and some of the properties along the road. Facing compulsory acquisition of their properties, the owners worked with Mass Rapid Transit Corporation Sdn Bhd (MRT Corp) to reach a win-win solution through an agreement whereby the properties could "coexist" with the MRT tunnel beneath them.

Since the signing of the Mutual Agreement between MRT Corp and the owners, work had been carried out throughout 2014 to strengthen the structures of the buildings, some of which were built before World War II.

The cooperation between MRT Corp and the Jalan Sultan property owners paid off when the the first tunnel – for future south-bound trains – beneath these buildings was excavated in November and December last year without any issues.

As with the first tunnel, the Underground Works Contractor, MMC Gamuda KVMRT (T) Sdn Bhd will be taking all precautions to ensure that tunnelling will proceed smoothly. This includes round-the-clock monitoring of the properties when the TBM excavates beneath the properties. Monitoring will continue even after the tunnel is constructed.

Besides the properties lying directly above the tunnel, monitoring will also be carried out on properties adjacent to the tunnel right-of-way. Instruments had been installed and constant readings will be taken to detect any signs of soil settlement.

As this second tunnel will run parallel to the first, which was constructed in November and December 2014, engineers of the project expect the impending excavation beneath the buildings to be also issue-free.

Tunnelling for this final stretch is expected to be completed in April 2015 when the Pudu 1 TBM will break through the wall of the Pasar Seni MRT Station box, marking the successful end of construction of the MRT Sungai Buloh-Kajang Line 9.5km underground alignment.



READY FOR ACTION • The Pudu 1 Tunnel Boring Machine being prepared for relaunch inside the Merdeka Station Box.



INTO THE EARTH • The Pudu 1 Tunnel Boring Machine inside the tunnel it excavated after it was relaunched on 30 January 2015.



DEEP UNDERNEATH • The MRT tunnels will run beneath Jalan Sultan and some of the shophouses along the road.



Status of tunnelling works as at 31 March 2015.

1. Semantan 1 TBM: Completed excavating north-bound tunnel between the Semantan Portal and KL Sentral (1.5km), and subsequently to Pasar Seni MRT Station (1.1km).

2. Semantan 2 TBM: Completed excavating south-bound tunnel between the Semantan Portal and KL Sentral (1.5km), and subsequently to Pasar Seni MRT Station (1.1km).

3. Pudu 2 TBM: Launched on 16 May 2014 from the Pudu Launch Shaft and broke through at Merdeka Station (650m) on 6 October 2014. The TBM was relaunched on 23 October 2014 and completed excavating the tunnel to Pasar Seni MRT Station (700m) on 3 January 2015.
4. Inai 1 TBM: Completed excavating north-bound tunnel between Cochrane Launch Shaft and Pasar Rakyat (1km). Continued excavating tunnel through the Bukit Bintang MRT Station box and broke through at the Pudu Launch Shaft (1.7km). The TBM was relaunched on 2 November 2014 and broke through at Merdeka Station (680m) on 4 January 2015. It was subsequently relaunched on 30 January 2015 and is currently excavating the tunnel towards Pasar Seni MRT Station.

5. Inai 2 TBM: Completed excavating the tunnel from the Inai Launch Shaft and the Pudu Launch Shaft (1.6km) on 18 October 2014.
6. Cochrane 2 TBM: Completed excavating the tunnel between Cochrane Launch Shaft and Pasar Rakyat (1km) on 9 January 2014.

7. Maluri 1 TBM: Completed excavating the tunnel from the Cochrane Launch Shaft to Maluri MRT Station and the Maluri Portal (1km) on 8 April 2014.

8. Maluri 2 TBM: Completed excavating the tunnel from the Cochrane Launch Shaft to Maluri MRT Station and the Maluri Portal (1km) on 24 April 2014.